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Patent Application of

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W. Thomas Timmons
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Sir:

RESPONSE TO RESTRICTION REQUIREMENT**WITH TRAVERSE**

In response to the Restriction Requirement dated December 12, 2005, Applicant believes that the restriction requirement is in error and traverses the requirement. None of the tables in the application and none of the formulas in the application are so restricted. Further, the language of Claim 26 makes no sense when restricted as required. Claim 26 states "wherein the . . . combination of polymers . . . is selected from the group consisting of . . ." A combination of polymers from a single polymer. The attached Appendix of Tables shows the close relationship of all 24 polymer types by both chemical groups (Table 1) and by surface chemical groups based formulated for surface tension (Table 5). Based on the attached Appendix of Tables, Applicant provisionally elects the group of polyacrylates, polyacrylics, polyesters, polydiglycidyletheralkyl/aryldiols, polysulfonamides, polysulfones and polyvinylhalogens in Claim 26. All of these polymer types are extremely closely related in

both classifications. Applicant reserves its rights in the remaining parts of Claim 26.

The USPO Action indicates that generic chemical groups such as various polymer types disclose patentably distinct species that should constitute patent applications separately.

The present patent application was written to be understandable and useable for individuals skilled in the art of chemistry, formulation of organics and inorganics, etc. The PA identifies specific compositions of individual polymers and mixtures of various polymer types, as well as, and more importantly, the technical and scientific guidelines to formulating products based on molecular composition of polymers, etc. and the blending of various polymers types to accomplish the formulation guides established in the invention that will provide good performance.

In the very first paragraph [0013] of the Summary of the Invention, the above point is clearly communicated by stating, “The impregnating compound has a polymer-based continuous phase designed to have solubility and surface properties within preselected limits. **The polymer-based continuous phase can be made from a single type of polymer or a mixture of two or more polymers.**”

The invention instructs individuals skilled in the art to formulate with various polymer types, hybrid polymers that have multifunctional groups of various polymer types that are polymerized into a given polymer. These polymers are to follow technical guidelines presented in the invention so as to establish proper water and non-water solubilities, surface tensions, cationic and anionic character, acidic and alkalinity resistance, etc. The invention puts forward specific means that identify how the various performance properties are affected by the variation in polymer types and polymer functional groups in a given polymer, as well as, mixtures of polymers.

Viewing the USPO Action document of the various polymer types cited in the invention or “distinct species” comprising epoxies, polyacetals, polyacrylates, polyacrylics, polyacrylamides, polyalkylamides, polyamides, polyamideimides, polycarbonates, polycarboxylic dihydric esters, polyimides, polyesters, polycelulose acetate butyrate, polydiglycidyletheralkyl/aryldiols, polysilicones, polysiloxanes, polystyrenes, polysucrose acetate butyrate, polysulfonamides, polysulfones, polyurethanes, polyvinylacetals, and polyvinylhalogens are not distinct species even within this group.

For example from this group, the following is a prepared partial list of polymer types

above that include some the same functional groups within each other:

- Epoxies:** polyacrylates, polyacrylics, polyacrylamides, polyalkylamides, polyamides, polyamideimides.
- Polyacetals:** polyvinylacetals.
- Polycarbonates:** polycarboxylicdihydric esters, polyesters, polycelulose acetate butyrates, polydiglycidylethealkyl/aryldiols, polysucrose acetate butyarates.
- Polystyrenes:** polycarboxylicdihydric esters, polyesters, polydiglycidylethealkyl/aryldiols, polysilicones, polysiloxanes, polystyrenes, polysucrose acetate butyarates, polysulfonamides, polysufones, polyurethanes.

To illustrate the above in a different way, an epoxy polymer can molecularly contain functional groups of, in part, acrylic, acrylate, amide, imide, amine, ester, halogen, alkyl, aryl, etc. and be classified as an epoxy polymer.

This invention illustrates to individuals skilled in the art how to formulate with specific homopolymers, heteropolymers, hybrid polymers, and mixtures of these types of polymers to accomplish specific performance properties that yield good performance.

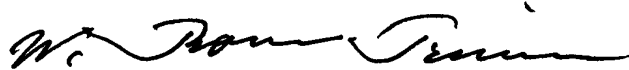
This invention takes a mixture of polymer types and presents means to calculate the three dimension parameters of solubility from the molecular compositions so that the degree of water solubility can be established and the inter-polymer compatibility of polymer-with-polymer can be established. The range or domain of acceptable solubility is identified within the invention. Other performance properties are also presented in the same manner as is solubility.

The continuous phase of the invention can be a single polymer, a hybrid polymer, or a mixture of many different polymer types that meet the specifications of the invention for the domains of various properties.

Once again, Applicant refers to the attached Appendix of Tables which clearly shows the close relationship of all 24 polymer types by both chemical groups and by surface chemical groups based formulated for surface tension, Table 1 and Table 5.

For the reasons set out above, Applicant respectfully traverses the restriction requirement and request that the restriction requirement be reversed.

Respectfully,

A handwritten signature in black ink, appearing to read "W. Thomas Timmons". The signature is fluid and cursive, with a large initial "W" and a long, sweeping underline.

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APPENDIX OF TABLES

Reference No. for Polymer Type	
Ref.	Polymer Type
1	Epoxies
2	Polyacetals
3	Polyacrylates
4	Polyacrylics
5	Polyacrylamides
6	polyalkylamides
7	polyamides
8	polyamideimides
9	polycarbonates
10	polycaroxylidihydric esters
11	polyimides
12	polyesters
13	polycellulose acetate butyrate
14	polydiglycidyletheralkyl/aryldiols
15	polysilicones
16	polysiloxanes
17	polysiloxides
18	polystyrenes
19	polysucrose acetate butyrates
20	polysulfonamides
21	polysulfones
22	polyurethanes
23	polyvinylacetals
24	polyvinylhalogens

Table 1 Chemical Groups in Polymer Type

Chemical Group	Bond Type	Polymer Type Reference Nos.
-CH ₃	alkyl	1-24
-CH ₂ -	alkyl	1-24
>CH-	alkyl	1-24
>C<	alkyl	1-24
CH ₂ =	oleffinic	1-24
-CH=	oleffinic	1-24
>C=	oleffinic	1-24
-CH=	aromatic	1-5,7-23
>C=	aromatic	1-5,7-23
-O-	ether	1-14,19-23
-O-	acetal	1-2,23
-O-	oxirane	1,8,11,22
-COO-	ester	1,3-4,9-10,12,13,19,22
>C=O	ketone	1-17,19-22
-CHO	aldehyde	2,14,22
>(CO) ₂ O	anhydride	1,10,12,14,22
-COOH	acid	1,3-10,12-14,19,22
-OH-->	H-bond	1-4,9-10,12-14,19,22
-OH	primary	1-17,19-23
-OH	secondary	1-17,19-23
-OH	tertiary	1-17,19-23
-OH	phenolic	1,3-8,10-12,14,21-24
-NH ₂	amino 1	1-8,11-12,14,20,22
-NH-	amino 2	1-8,11-12,14,20,22
>N-	amino 3	1-8,11-12,14,20,22
-C≡N	nitrile	3-5,7-8,11-12,22
-NCO	isocyanate	3-5,22
HCON<	formamide	1-2,5-8,11-12,22-23
-CONH-	amide	1,5-8,11,12,22
-CONH ₂	amide	1,5-8,11,12,22
OCONH	urethane	1,3-8,11,12,22
-S-	thioether	20,21,22
-SH	thioether	20,21,22
Cl	primary	3,4,12,14,20,21,24
Cl	secondary	3,4,12,14,20,21,24
Cl	twinned	3,4,12,14,20,21,24
Cl	aromatic	3,4,12,14,20,21,24
Br	primary	3,4,12,14,20,21,24
Br	aromatic	3,4,12,14,20,21,24
F	primary	3,4,12,14,20,21,24

Table 3 Examples of Polymer Types Formulated for Solubility Parameters

polyvinylchloride
polyacrylonitrile
polymethacrylate
polyamideimide
polybutylacrylate
polystyrene
polybutadiene

Table 5 Surface Chemical Groups Formulated for Surface Tension

	Chemical Group	Polymer Type
-CH3	alkyl	1-24
-CH2-	alkyl	1-24
>CH-	alkyl	1-24
-CH=	aromatic	1-5,7-23
>C=	aromatic	1-5,7-23
F	primary	3,4,12,14,20,21,24
Cl	primary	3,4,12,14,20,21,24
Cl	secondary	3,4,12,14,20,21,24
Cl	twinned	3,4,12,14,20,21,24
Cl	aromatic	3,4,12,14,20,21,24

Table 11 and 12 Cationic and Anionic Chemical Groups (54) of Polymers Identified to Prevent Deposit Formation of Water Contaminates

There are 54 chemical groups identified in these two tables that are analogously part of polymers formulated to control water contamination from depositing on the impregnation continuous phase surface